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Economic Composition of the Mid-Minnesota Region of Minnesota: Industries and Performance

Authored by Brigid Tuck with assistance from Adeel Ahmed and Neil Linscheid
Presented in partnership with the EDA Center at University of Minnesota, Crookston

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ECONOMIC COMPOSITION OF MID-MINNESOTA REGION OF MINNESOTA: KEY FINDINGS

To analyze the economic composition of the Mid-Minnesota region of Minnesota, University of Minnesota Extension conducted an analysis of industry outputs, employment and wages, and interdependencies. Following is a report of key findings. This report is presented in partnership with the EDA Center at the University of Minnesota, Crookston.

Manufacturing is a significant driver of the economy in the Mid-Minnesota region (Kandiyohi, McLeod, Meeker, and Renville counties). Manufacturers in the region generate 41 percent of all output and employ 14 percent of all workers. Health care and social assistance is another major driver of the economy. The health care and social assistance industry employs 16 percent of all workers.

REGIONAL STRENGTHS:

- **Health care and social assistance**. The health care and social assistance industry was the fastest growing industry in the Mid-Minnesota region between 2003 and 2013, with the number of jobs in the industry increasing by 43 percent. The region added more jobs in the industry than would have been expected given national and industry trends. One concern for the industry is that wages decreased by an inflation-adjusted 9 percent between 2004 and 2013.
- **Manufacturing**. Despite the loss of over 1,100 jobs in the manufacturing industry between 2003 and 2013, the manufacturing industry in the Mid-Minnesota region is an economic strength. The industry fared better than expected, given national and industry trends. Wages are fairly strong — over $250 a week above the average weekly wage in the region. Wages increased by an inflation-adjusted 8 percent between 2000 and 2013. Major job losses appear limited to one manufacturing sector.
- **Nonstore retailers**. Despite a decline of 4 percent in the number of retail trade jobs in the Mid-Minnesota region, the number of jobs in the nonstore retail sector increased by 383 percent (276 jobs) according to the EMSI database. This sector includes businesses such as vending machine operators, mail order houses, electronic shopping, and home heating oil dealers. The location quotient for the sector is almost 2, indicating a higher concentration of jobs in the region as compared to the nation. Most of the new jobs appear to be with home heating oil dealers.

REGIONAL CONCERNS:

The analysis also revealed areas of potential concern for the region from an economic standpoint. These industries are not as competitive in the region and may warrant additional attention and exploration.

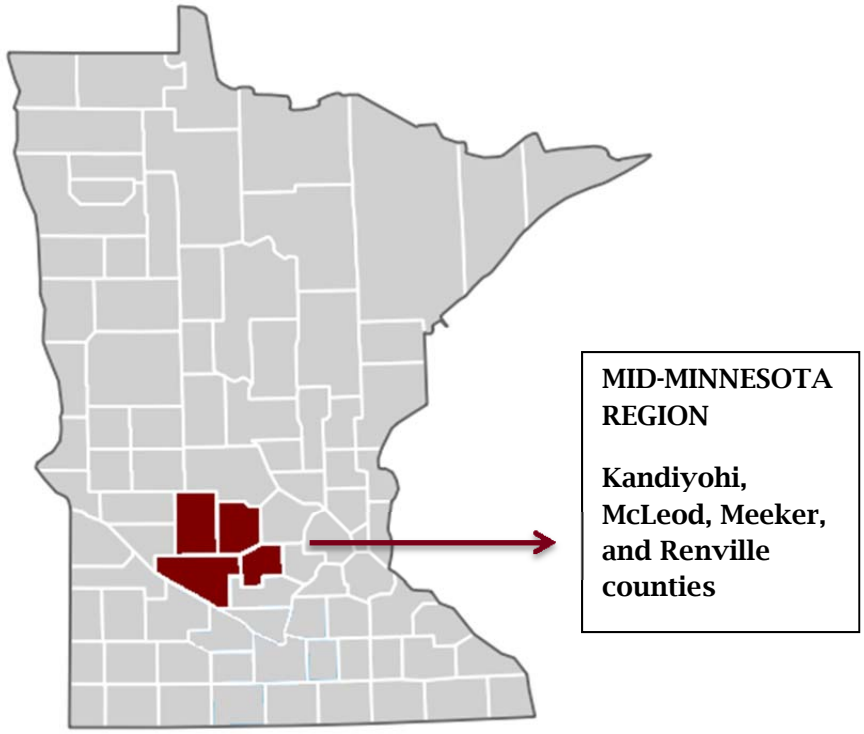
- **Construction.** The number of construction jobs in the Mid-Minnesota region declined by 648 between 2003 and 2013. Although the Great Recession of 2008-2009 hit the industry hard, nearly half those jobs losses are estimated to be as a result of local conditions.
- **Nursing and residential care facilities.** Nursing and residential care facilities employ 40 percent of health care and social assistance workers in the Mid-Minnesota region. While the number of jobs in the sector increased by over 30 percent between 2003 and 2013, the average weekly wage (after adjusting for inflation) decreased by 5 percent. The 2013 average weekly wage in the nursing and residential care facilities sector is well below the average weekly wage across all industries in the region and is $75 below the average weekly wage in the sector in Minnesota.

STUDY BACKGROUND AND OVERVIEW MID-MINNESOTA REGION

Minnesota's regions differ in size, social and economic characteristics, history, and geography. These differences influence the economy of the regions, as well as economic development decisions and discussions. Therefore, conversations about Minnesota's economy and its economic future must include discussions of the diverse drivers of economic activity in the state's regions. University of Minnesota Extension, in responding to a broader conversation about the role of Greater Minnesota in the state's economy, is producing economic profile reports on 12 Minnesota non-metro regions, as defined by the boundaries of the Regional Development Organizations. This report is provided in partnership with the EDA Center at the University of Minnesota, Crookston.

The Mid-Minnesota region, represented by the Mid-Minnesota Development Commission, is comprised of four counties including Kandiyohi, McLeod, Meeker, and Renville. This region includes the regional center of Willmar, along with sub-regional hubs such as Hutchinson and Litchfield.

Map 1: Map of Mid-Minnesota Region in Minnesota



The goals of the report are 1) to identify the region's strengths – both industries that are the current core of the economy and emerging industries – and 2) to identify concerns for the region. Regional concerns focus on industries that may be underperforming or declining.

To ascertain which industries are regional strengths and which are potential regional concerns, this report draws from output, employment, and wage data. The first section looks at industry outputs. Output measures the value of sales by industry. Studying output by industry provides a perspective on which industries are driving the highest sales in the region. The second section details employment. Studying employment by industry identifies industries that employ the highest number of people in the region. The

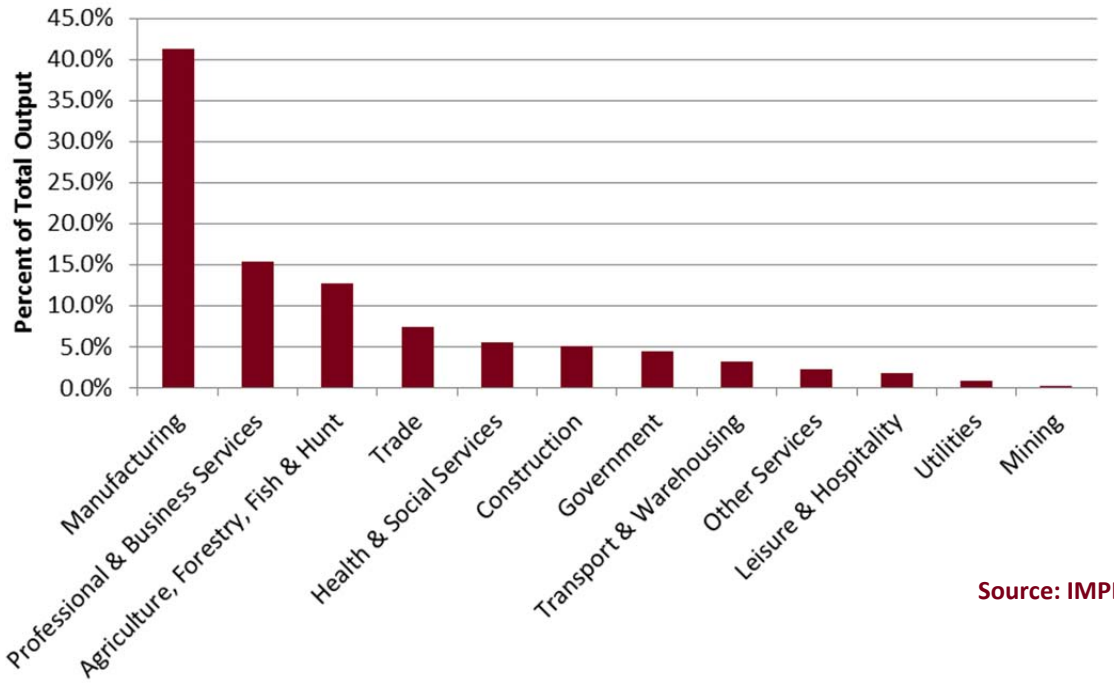
employment section of this report also discusses wages. The third section of this report looks at economic interdependencies. Examining how sectors interact and connect with each other can provide powerful insights into an economy.

INDUSTRY OUTPUT

Output is an important factor to consider when assessing the economic composition of a specific geography. Output provides information about the economic activity of a region and also is directly tied to employment.

In 2012, businesses and industries in the Mid-Minnesota region produced $12.6 billion in goods and services, according to estimates from the IMPLAN economic model. Output in the Mid-Minnesota region accounts for approximately 2 percent of Minnesota's $567.8 billion economy and approximately 6 percent of Greater Minnesota's $218.8 billion economy. In 2012, according to the IMPLAN model, the manufacturing industry created over 40 percent of total output in the Mid-Minnesota region, and is the dominant source of output in the region. The professional and business services industry produced 15 percent of output and the agriculture, forestry, fishing, and hunting industry produced nearly 13 percent. The top three industries in the region account for 69 percent of output.

Chart 1: Industry Share of Total Output Mid-Minnesota



Source: IMPLAN

Chart 1 shows output by major industry category helping to frame discussions about output in the region. However, examining output by sector can be valuable as well. Sectors are a more refined level of analysis. Individual sectors form industries. For example, crop production and animal production are sectors within the industry of agriculture.

Beyond the major industry categories, the top ten *sectors* in the Mid-Minnesota region produce an estimated $5.2 billion of output (table 1). Computer storage device manufacturing is the largest sector, measured by

output, in the Mid-Minnesota region. The Mid-Minnesota region is responsible for 97 percent of computer storage device manufacturing production in Greater Minnesota. Poultry processing is the second largest sector. Grain farming, including corn and wheat production, is the third largest sector in the region.

Manufacturing produces over 40 percent of output. Within the manufacturing industry, the largest sectors, according to the IMPLAN model, are computer storage device manufacturing ($1 billion); poultry processing ($797 million); and coated and laminated paper, packaging paper and plastics film manufacturing ($465 million). "Other" animal food manufacturing and beet sugar manufacturing are also in the top ten individual manufacturing sectors. Clearly food processing is important to the Mid-Minnesota regional economy.

Other top sectors in the region, as measured by output, include the housing market and wholesale trade businesses. *The housing market sector here largely reflects mortgage payments for housing.*[1] Household expenditures for rental units are included in another sector.

Table 1: Top Ten Sectors in Mid-Minnesota Region, Sorted by Output

Sector	Total Output (millions)	Output per Worker
Computer storage device manufacturing	$1,006.3	$1,065,465
Poultry processing	$797.2	$439,959
Grain farming	$600.2	$171,611
Housing market	$510.4	N/A
Wholesale trade businesses	$482.2	$193,127
Coated and laminated paper, packaging paper and plastics film manufacturing	$465.0	$447,047
Monetary authorities and depository credit intermediation activities (banks)	$390.4	$417,415
Other animal food manufacturing	$379.3	$1,377,310
Beet sugar manufacturing	$320.1	$723,482
State and local government, education	$270.1	$60,225
Top ten total	$5,221.2 (41%)	
Total output in region	$12,618.0	**Source: IMPLAN**

For the majority of the sectors in table 1, high output is driven by high productivity (output per worker). For example, each computer storage device manufacturing employee produces an estimated $1 million in output annually. The clear exception in the table is state and local government. Government output is linked primarily to the number of employees. Output is not the best measure for the government sector, because government does not make sales in the traditional sense of other industries. In addition, although not

[1] The housing market sector exists in the IMPLAN database used for this analysis because IMPLAN is an input-output model which traces the flow of goods and services in an economy. Households are actors in the local economy and housing is one of a household's largest expenses. Therefore, there needs to be a system for accounting for those expenditures. For most households, expenditures for housing are based on the value of mortgage payments. However, IMPLAN also makes estimates for households that own their house outright. To be clear, the housing market is not a measure of the value of the physical housing stock.

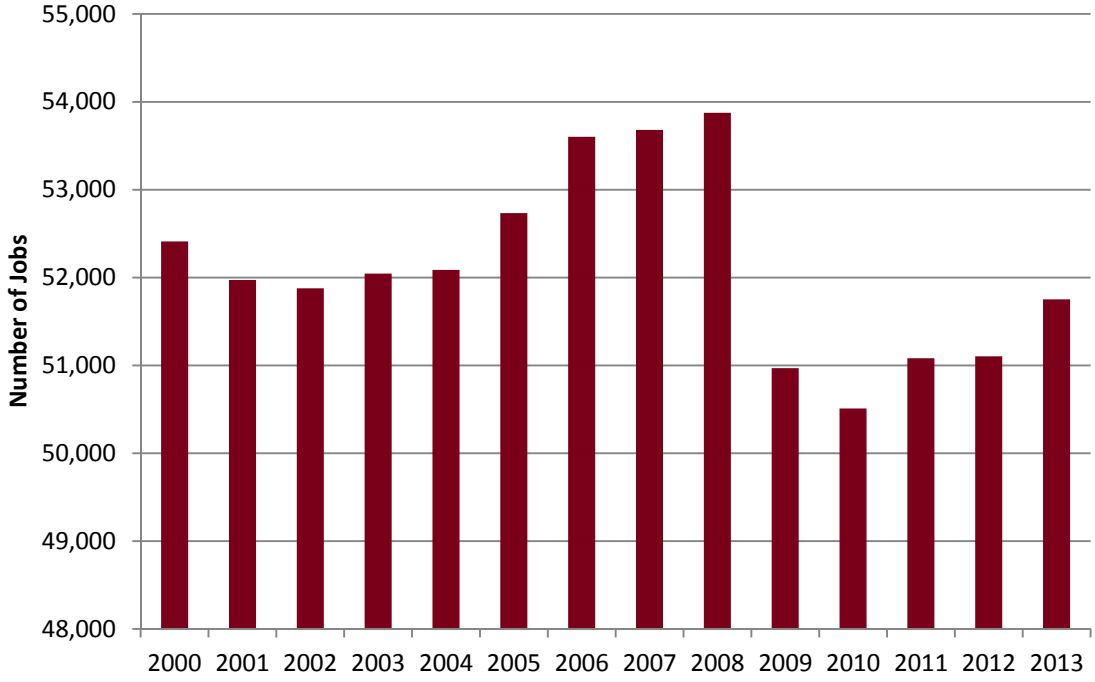
highlighted in the table, output per worker is often lower for service or labor intensive industries, as it takes more workers to produce output.

The industries with the lowest output per worker in the region include private household services (households providing services to other households, such as cleaning) and agriculture and forestry support services (including custom planting, harvesting, and fertilizer application). Since the model measures one job as one job, these two industries, which have relatively high seasonal and part-time employment, likely have lower output per worker because a significant share of the workers are working less than year-round and less than full-time.

EMPLOYMENT AND WAGES

In 2013, there were 51,800 jobs in the Mid-Minnesota region. The number of jobs in the Mid-Minnesota region was relatively steady between 2000 and 2004. The number of jobs in the Mid-Minnesota region increased between 2005 and 2008 and then decreased consistent with the 2008-2009 Great Recession. The number of jobs in the region has been increasing since 2010, however the number of jobs has not recovered to pre-recession levels. In 2013, job levels were still 4 percent below levels in the peak of 2008.

Chart 2: Total Employment 2000-2013 Mid-Minnesota



Source: QCEW

The highest employment growth industries in the Mid-Minnesota region between 2003 and 2013 were health care and social assistance; professional, scientific, and technical services; and crop and animal production.[2] The industries suffering the most job losses during the period in the Mid-Minnesota region include government, manufacturing, and construction (see table 2).

Shift-share analysis provides an examination of the drivers of growth and decline for a specific industry in a specific region through comparisons to industry and national trends. The analysis provides an interesting

[2] EMSI (Economic Modeling Specialists International). www.economicmodeling.com.

interpretation of the changes in each industry (table 2). In this analysis, the primary focus is on the competitive effect. A strongly positive competitive effect indicates that particular characteristics of the local economy are driving growth in the region. A strongly negative competitive effect can be interpreted as a warning that this industry within the local economy may not be faring as well as it should. For more on shift-share analysis and how to interpret the results, see page 14.

The health care and social assistance industry added the most jobs between 2003 and 2013 (2,733 jobs). If the health care and social assistance industry in the Mid-Minnesota region had grown at the same overall rate as the national economy in all industries, it would have added 309 jobs (national growth effect). The health care and social assistance industry at the national level also gained jobs during the time period. If the Mid-Minnesota region's health care and social assistance industry had grown at the same rate as the health care and social assistance industry nationally, then it would have added an additional 1,486 jobs (industry mix effect).

Since the health care and social assistance industry in the Mid-Minnesota region added even more jobs than indicated by the industry mix and the national growth effect, the health care and social assistance industry in the region is considered competitive. Understanding the factors that contribute to this effect can be an important task for economic development officials to undertake.

Table 2: Shift-Share Analysis for Growth and Decline Industries[3]

Industry	Change 2003-2013	Industry Mix Effect	National Growth Effect	Competitive Effect
Top 3 Job Adding Industries				
Health Care and Social Assistance	2,733	1,486	309	938
Professional, scientific, and technical services	352	157	42	152
Crop and animal production	337	(3)	88	251
Top 3 Job Loss Industries				
Government	(1,235)	(313)	438	(1,360)
Manufacturing	(1,154)	(2,567)	566	847
Construction	(648)	(474)	130	(304)

Source: EMSI

Within the health care and social assistance industry, the sector with the most positive competitive share was the nursing and residential care services sector. The sector added 891 jobs in the Mid-Minnesota region between 2003 and 2013; of those jobs, 440 were due to the competitive effect. The ambulatory care sector also added jobs in the period (571); however, the sector posted a negative competitive effect of 109 jobs.

[3] For an explanation of shift-share analysis, please see the methodology section. Note, the competitive effect totals may not add due to rounding.

After health care and social assistance, professional, scientific, and technical services was the industry to add the most jobs between 2003 and 2013. The industry also posted a positive competitive share. Within the industry, the biggest job gains were in the computer systems design and related services sector (196 new jobs) and scientific research and development (R&D) services (107 new jobs).

The manufacturing industry in the Mid-Minnesota region shed 1,154 jobs during the time period. The jobs reflect a 10 percent decline in the number of manufacturing jobs in the region. According to the shift-share analysis, however, the region could have lost even more jobs based on trends in the manufacturing industry nationally. The Great Recession was especially difficult for manufacturers in the United States. Manufacturers in the Mid-Minnesota region fared better, making the region competitive in the manufacturing industry.

The computer and electronic product manufacturing sector posted the highest number of lost jobs between 2003 and 2013. During that time period, the sector lost 1,366 jobs, representing a 50 percent decline in jobs. This is significant, as the computer storage device manufacturing industry is the largest single source of output in the region, as discussed earlier. These losses may also partially explain why job levels have not recovered to pre-recession levels in the region.

Other manufacturing sectors with significant job losses include paper manufacturing; furniture and related product manufacturing; miscellaneous manufacturing; and printing and related support activities.

Manufacturing job growth was strong in the fabricated metal product manufacturing sector. The sector added 685 jobs, a growth rate of 80 percent, between 2003 and 2013. Job growth was also recorded in machinery manufacturing; chemical manufacturing; plastics and rubber parts manufacturing; and food manufacturing.

Key points for economic developers to consider from this employment data:

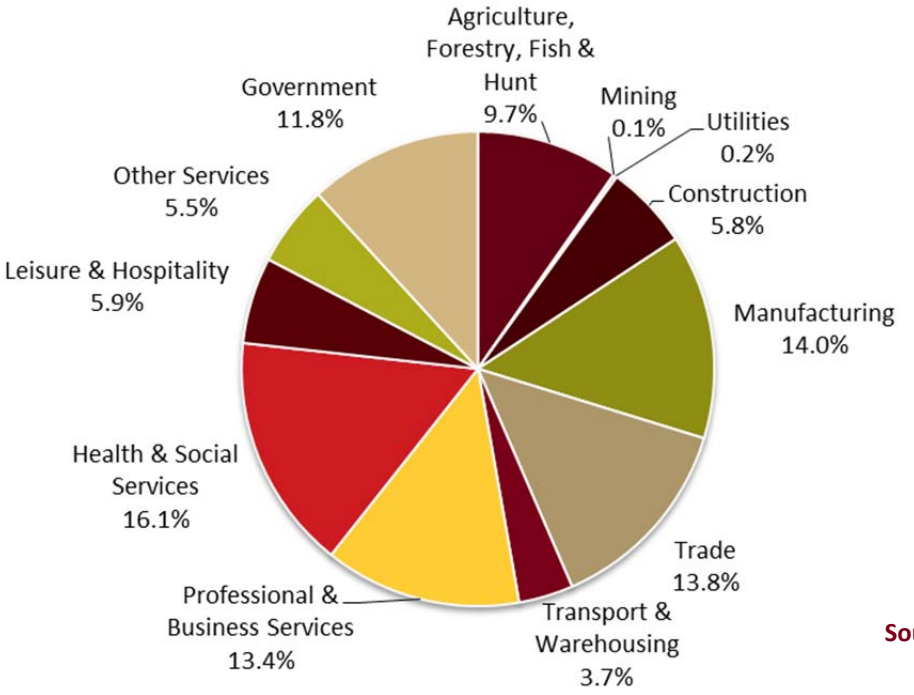
- Find ways to support competitive industries. This will likely mean engaging industry leaders to discuss the key drivers of economic advantage in this region, such as health care and social assistance. Some regions of the state had negative competitive shares. What factors are giving the Mid-Minnesota region a competitive advantage in this industry? What components of the industry are growing? What can be done to support this growth?
- Manufacturing in the Mid-Minnesota region fared fairly well during the Great Recession. What factors supported the industry during the time period? For those industries that grew, what supported that growth? For those industries that experienced job losses, what aspects led to those losses? One manufacturing sector appears to be responsible for the majority of the job losses. Setting aside that one sector, how did manufacturing in the region fare?

Employment and Wages by Industry

Employment in the Mid-Minnesota region is fairly balanced across industries (chart 3). The largest industry, as measured by employment, is the health and social services industry, with 16 percent of all jobs in the region. The manufacturing industry hosts 14 percent of all jobs in the Mid-Minnesota region. Nearly 14 percent of all jobs are in the trade industry. The smallest shares of employment are in the mining and utilities industries.

As noted, the health and social services industry was the fastest growing industry between 2003 and 2013, as measured by employment. Manufacturing jobs declined slightly during the time period. The trade industry also shed jobs.

Chart 3: Employment by Industry: Mid-Minnesota Region



Source: IMPLAN

Health and Social Services

Based on the IMPLAN database, the health and social services industry accounted for 16 percent of all employment in the region, making it the largest industry as measured by employment. The industry has been growing in the Mid-Minnesota region. Between 2003 and 2013, employment in the industry grew by 43 percent. As highlighted earlier, it was the fastest growing industry in the region.

In 2013, the average weekly wage in the health and social services industry was $616. This wage is slightly below the average across all industries in the region ($688). The average weekly wage in the industry declined by an inflation-adjusted 9 percent between 2004 and 2013.

In the Mid-Minnesota region, the largest health care and social services sector was nursing and residential care facilities. Approximately 40 percent of all health care and social services jobs are in the sector. The sector grew by 31 percent between 2003 and 2013. The sector has a location quotient of 3.00, indicating there are 3 times as many jobs in the nursing and residential care sector in the Mid-Minnesota region as compared to the nation. (For more on the location quotient, please see page 13). Within the sector, continuing care and assisted living facilities added over 1,000 jobs while skilled nursing facilities lost 124 jobs.

The 2013 average weekly wage in the nursing and residential care facilities sector was $383, well below the average weekly wage in the health care industry in the region. The 2013 average weekly wage in the nursing and residential care sector represents an approximate 5 percent decline in wages from 2000, after adjusting for inflation. In comparison, in 2013, the average weekly wage for the nursing and residential care facilities sector in Minnesota was $458, which represents an inflation-adjusted 10 percent decline from 2000.

The number of hospital jobs in the region increased by 92 percent between 2003 and 2013. However, the location quotient for hospital employment in the Mid-Minnesota region is 0.42, indicating there may be additional room for growth in this health care sector. Jobs in the hospital sector are only a small portion of the total health care and social assistance industry in the Mid-Minnesota region.

Manufacturing

Measured by employment, manufacturing is the second largest industry in the Mid-Minnesota region. As documented in table 2, the number of jobs in the industry declined between 2003 and 2013. The job losses represent a 10 percent decline during the time period. The location quotient for the manufacturing industry in the region is 2.29, indicating employment in the region is approximately twice as concentrated in manufacturing as compared to the nation. In 2013, according to the EMSI database, McLeod County was home to just over 5,000 manufacturing jobs; Kandiyohi County was home to over 3,000 jobs; Meeker County was home to over 1,000 jobs; and Renville County was home to just under 1,000 manufacturing jobs.

The 2013 average weekly wage in the manufacturing industry was $953, more than $250 a week higher than the average weekly wage across all industries in the Mid-Minnesota region. Despite employment losses between 2003 and 2013, the average weekly wage in the industry increased by nearly 8 percent (after adjusting for inflation) in the region. The 2013 average weekly wage was slightly over $1,000 in Renville and McLeod counties. The 2013 average weekly wage was slightly over $800 in Kandiyohi and Meeker counties.

The manufacturing industry in the Mid-Minnesota region is fairly diverse. In 2013, the largest manufacturing sector in the region was food manufacturing with 3,461 employees. Animal slaughtering and processing (poultry processing) is one of the biggest food manufacturers in the region. However, the region is also home to sugar product manufacturing, fruit and vegetable canning and preservation, and animal food manufacturing, among others. Fabricated metal manufacturing is the second largest sector, employing 1,546 workers in 2013. Other major manufacturing sectors include computer and electronic product manufacturing (1,375); machinery manufacturing (1,263); and paper manufacturing (1,259). Of these major manufacturing sectors, food manufacturing, fabricated metal manufacturing, and machinery manufacturing grew between 2003 and 2013. Computer and electronic product manufacturing and paper manufacturing lost jobs during the same period.

Trade

Of the trade jobs in the Mid-Minnesota region, the majority (75 percent) are in the retail trade sector. Between 2003 and 2013, the number of retail trade jobs declined by 4 percent (240 jobs). Approximately half of those lost jobs, according to shift-share analysis, are a result of industry conditions — likely the effects of the Great Recession. The other half, though, are a result of competitive factors in the region. The location quotient for the retail trade industry in the Mid-Minnesota region is 1.08. A location quotient near one indicates employment in the industry is concentrated in about the same amount as employment at the national level. The number of jobs in the retail trade industry is highest in Kandiyohi and McLeod counties.

In retail trade, the 2013 average weekly wage was $415, or nearly $275 a week lower than the average weekly wage across all industries in the region. The average weekly wage increased by a modest inflation-adjusted 2.5 percent between 2000 and 2013. Kandiyohi County had the highest retail weekly wages in 2013, at $439 per week. Renville County had the lowest retail weekly wages at $385.

Between 2003 and 2013, the fastest growing retail trade sector, according to the EMSI database, was nonstore retailers. Nonstore retailers include electronic shopping and mail order houses, vending machines, and direct selling. Direct selling includes home heating oil dealers. According to the EMSI database, the number of jobs

in this sector grew by 383 percent, adding 276 new jobs, with 192 of those jobs in the fuel dealers category. Given national and industry trends, shift-share analysis indicates the sector should have added only 6 jobs. Much of this growth appears to have occurred in McLeod County. The region's location quotient for the sector is 1.96, indicating jobs in this sector are twice as concentrated as compared to the nation. Average weekly wages, however, have fallen in the sector, dropping an inflation-adjusted 33 percent between 2000 and 2013, according to data from the federal government's Quarterly Census of Employment and Wages data.

Twenty-five percent of trade jobs in the Mid-Minnesota region are in the wholesale trade sector. Between 2000 and 2013, the number of jobs in the wholesale trade industry dropped by 7 percent (169 jobs). The majority of these lost jobs were a result of competitive conditions in the region, according to shift-share analysis. The location quotient for the industry is 0.99. Like the retail trade location quotient, this is very close to 1, indicating the ratio of jobs in this industry at the regional level is comparable to the ratio of jobs in this industry at the national level. The number of wholesale trade jobs is fairly evenly distributed across the counties in the region. There are 751 jobs in Kandiyohi County, 586 in McLeod County, 438 in Meeker County, and 408 in Renville County.

In wholesale trade, the 2013 average weekly was $1,003. This is more than $300 a week higher than the average weekly wage across all industries in the region. The average weekly wage grew by 16 percent between 2000 and 2013. Kandiyohi County had the highest weekly wages in 2013, at $1,124. Meeker County had the lowest weekly wages at $798.

LOCAL INTERDEPENDENCIES

Beyond studying basic structure, examining how sectors interact with each other can provide powerful insights into an economy. Input-output models have been developed to estimate how sectors connect within a region. This section of the report will examine two significant industries in the Mid-Minnesota regional economy – health care and social services, and manufacturing — and their connections with other industries. Specifically, the analysis will focus on 1) nursing and residential care facilities and 2) computer storage device manufacturing. These are two of the largest sectors within their respective industries as measured by output and employment.

Multipliers include both indirect and induced effects. The discussion here focuses on indirect effects. Indirect effects are generated when a firm purchases inputs (goods and services) from other business establishments, which in turn purchase the goods and services that those supplier businesses need to produce their output. These are often referred to as supply chain effects. Induced effects are generated through the spending when employees of a local industry spend their wages in the region.

Multipliers are driven by the amount of purchases a sector makes from other sectors. Understanding what inputs are necessary for the production of a good or service, and the extent to which those inputs are produced locally, can provide insights into the potential for economic development from the sector.

Health Care and Social Services – Nursing and Residential Care Facilities

Multipliers for health care and social service sectors in the Mid-Minnesota region are estimated to range from 1.3 to 1.4. Table 3 shows the top inputs purchased locally by nursing and residential care facilities, the percent of total input expenditures spent on the item, and the local availability of the item. For every dollar spent on inputs by nursing and residential care facilities, 4.8 percent is spent on real estate buying and selling, leasing, managing, and related services (essentially this measures expenditures for the building and land); 2.7 percent on insurance; and 1.9 percent on management, scientific, and technical consulting.

Nursing and residential care facilities are important sources of local demand for real estate; electricity; food and drinking places; and wholesale trade for several reasons.[4] First, these sectors with strong connections to nursing and residential care facilities are the top industries for indirect effects, capturing the 30 to 40 cents of additional economic activity that flows from every dollar of nursing and residential care output mentioned above. Second, there may be opportunities for increased local production of insurance; management, scientific and technical services; and pharmaceutical preparations, because nursing and residential care facilities are purchasing these outputs from outside the region.

Pursuing economic development based on possible opportunities for supply chain development is one economic development approach. However, before moving forward, decision-makers should: 1) take a scan of the industry, as it could be that the suppliers are located just outside the region as defined for this study and therefore considered local, and 2) explore the reasons for the current industry location, as location decisions are based on a broad variety of factors including proximity to supplies, transportation routes, and specialization and economies of scale.

Table 3: Top Purchases by Nursing and Residential Care Facilities in the Mid-Minnesota Region, Percent of Total Expenditures, and Local Availability

Input	Percent of Input Expenditures	More than 50% of Demand Available from Suppliers within the Mid-Minnesota Region
Real estate buying and selling, leasing, managing, and related services	4.8%	Yes
Insurance	2.7%	No
Management, scientific, and technical consulting	1.9%	No
Pharmaceutical preparations	1.8%	No
Employment services	1.7%	No
Electricity and distribution services	1.5%	Yes
Food and drinking places	1.3%	Yes
Wholesale trade	1.2%	Yes
Processed animal (except poultry) meat and rendered byproducts	1.2%	No
Management of companies and enterprises	1.1%	No

Source: IMPLAN

Manufacturing – Computer Storage Devices

Output multipliers for the computer product manufacturing sectors in the Mid-Minnesota region are estimated to range from 1.2 to 1.3. In other words, for every dollar of output generated by the sector (computer storage devices), $0.20 to $0.30 are generated in other regional sectors that supply that sector.

[4] Local here is the Mid-Minnesota region.

Table 4 highlights expenditures by computer storage device manufacturers. For every dollar spent on inputs, computer storage device manufacturers are estimated to spend 11.1 percent on computer storage devices[5], 10.8 percent on software; and 10.8 percent on wholesale trade. For example, since the computer storage device sector produces $1.0 billion of output in the region, this translates into computer storage device manufacturers buying $84.8 million of product from software manufacturers.

According to the IMPLAN model, the computer storage device manufacturing sector purchases a considerable amount of other manufacturing products (software, semiconductor and related devices, and computer terminals and other computer peripheral equipment). Unfortunately, those manufacturing products are not available for local purchases, meaning the computer storage device manufacturers must purchase from outside the region. Locally, computer storage device manufacturers have access to wholesale trade, advertising and related services, and electricity.

Table 4: Top Purchases by Computer Storage Device Manufacturing Facilities in the Mid-Minnesota Region, Percent of Total Expenditures, and Local Availability

Input	Percent of Input Expenditures	More than 50% of Demand Available from Suppliers within the Mid-Minnesota Region
Computer storage devices	11.1%	Yes
Software	10.8%	No
Wholesale trade	10.8%	Yes
Semiconductor and related devices	7.7%	No
Management of companies and enterprises	7.0%	No
Computer terminals and other computer peripheral equipment	3.2%	No
Scientific research and development services	3.0%	No
Advertising and related services	1.3%	Yes
Printed circuit assemblies	1.0%	No
Electricity and distribution services	1.0%	Yes

Source: IMPLAN

These two examples (nursing and residential care facilities and computer storage device manufacturing) demonstrate the importance of economic interdependencies and interactions in the region. In general, industries that purchase from local suppliers tend to have higher economic impacts in the region.

[5] The computer storage device sector includes a broad array of manufacturing activities related to computer storage device manufacturing. Purchases within the industry may reflect the purchases of specialized products made by one manufacturer and used in the production process of other computer storage device manufacturers.

METHODOLOGY, DATA, AND SOURCES

This report presents the economic characteristics of the region and an analysis of industries, income, employment, and local interdependencies. Three data sources were accessed in the preparation of the report. One data source is the IMPLAN database. IMPLAN is an input-output model developed by MIG, Inc. The database compiles a variety of sources to provide data on output, employment, and labor income by county for 440 economic sectors. A second data source is the Quarterly Census of Employment and Wages (QCEW) data provided by the Minnesota Department of Employment and Economic Development. This data is used, when necessary, to compliment or clarify the IMPLAN data. Finally, data from Economic Modeling Specialists International (EMSI) is presented in this report. The EMSI data in this report is derived from QCEW data; however, EMSI provides simple tools for performing calculations, such as shift-share analysis, on the data.

The boundaries of service of the Regional Development Commission were used for this study's definition of the Mid-Minnesota region of Minnesota. The North American Industry Classification System (NAICS) code was used in the study. The NAICS code is the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. This was used to enable uniformity and also for easy data accessibility.

Finally, data was analyzed with input from Extension Educators in the region and findings were compiled into the report.

Shift-Share Analysis

The results of shift-share analysis are presented in this report. Shift-share analysis is a powerful tool for understanding the drivers of economic change in an industry. Shift-share analysis parses economic change (here employment changes) into three components: national growth, industrial mix, and competitive share.

- National Growth: National growth indicates how many jobs a local economy would have gained (or lost) as a result of the growth (or decline) of employment at the national level. For example, consider a local economy with 100,000 jobs at the beginning of the time period. If during the period under consideration, the number of jobs in the United States grew by a rate of 2 percent, then at the end of the time period under consideration, the local economy would be expected to have 102,000 jobs.
- Industrial Mix: Industrial mix indicates how many jobs a particular industry within the local economy would have gained (or lost) if the local industry grew (or declined) at a rate similar to the industry as a whole in the United States. For example, if 1,000 people were employed in the finance industry in the local economy at the beginning of the period, and the finance industry as a whole in the U.S. grew at a rate of 10 percent, then at the end of the time period under consideration, the local finance industry would be expected to have 1,100 jobs.
- Competitive Share: Competitive share is the remainder of change in employment for the region examined. From our example, region's employment should have grown by 2,100 jobs, looking at overall national growth and then growth in the finance industry itself. If the local economy actually grew by 3,100 jobs in the finance industry, then 1,000 jobs were added because the local economy grew faster than expected, given national and industry trends. Conversely, if the local economy grew by only 1,000 jobs, then the economy was not as competitive as it should have been, given national and industry trends.
- Percent Competitive Share: This is the percent of total jobs that are sourced from competitive share. A competitive share of 80 percent would indicate that 80 percent of the jobs during the time period were derived from the competitive share, rather than from national and industry trends.

Location Quotients

This analysis reports the location quotient for certain industries. Location quotients are used in determining the concentration of a particular industry or sector in a region compared to a larger study area. In this analysis, the location quotient for the region versus the state is reported. If, say, 30 percent of employment in a region is in health care, while at the state only 15% of employment is in health care, then the location quotient would be 2, indicating that the region has twice as much employment in health care than the state as a whole.

OTHER DATA RESOURCES

Source	Link	Description
Harvard Business School and the U.S. Economic Development Administration	http://www.clustermapping.us/	Open data on regional industry clusters and economies, with analysis available for states, economic areas, metropolitan and micropolitan areas, counties, and customized regions based on counties. Data offers insights into performance, business environment and demographics.
Wilder Foundation	www.mncompass.org	Comprehensive data source for Minnesota counties and cities. In collaboration with the Initiative Foundations and others, Minnesota Compass has added data about smaller cities.
MN Demographers Office	http://mn.gov/admin/demography/data-by-topic/population-data/our-estimates/index.jsp	Go here for population estimates by EDR, County, and City/Townships. 2013 Estimates are available.
MN Land Economics	http://www.landeconomics.umn.edu/	Go here for information about land sales, land values, property taxes, soil type, etc. The database can be used to get information at the local, county, and state levels.
Headwaters Economics	http://headwaterseconomics.org/tools/eps-hdt	Generate your own socioeconomic profiles from federal data sources, by using the EPS-HDT Tool. The attached guidebook presents the data and provides a step by step walk-through on how to think about it.
DEED Data Tools	http://mn.gov/deed/data/data-tools/index.jsp	DEED provides access to several data tools such as labor market data, unemployment data, and many others. Most labor market data can be accessed through the labor market portal: https://apps.deed.state.mn.us/lmi/rws/
University of Wisconsin Extension	http://fyi.uwex.edu/downtown-market-analysis/understanding-the-market/demographics-and-	Learn more about demographic and lifestyle analysis

	lifestyle-analysis/	
University of Wisconsin Extension	http://cced.ces.uwex.edu/files/2013/02/Resource-Document-Total-12.pdf	Discover useful links to sources of information for economic developers
OnTheMap	http://onthemap.ces.census.gov/	Mapping tool from the census. Use this understand where people live vs work
University of Wisconsin-Madison, Michigan Tech University, University of New Hampshire	http://www.netmigration.wisc.edu/	Use this to learn about – and visualize – migration patterns for U.S. counties.